RISC PC

Data Sheet 2
ARM610: first of a new series of CPUs for Acorn

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At the heart of the Acorn Risc PC lies a new 30MHz ARM 610 microprocessor, designed by Advanced RISC Machines Limited. Like its predecessor, the ARM3 used in the A5000, this is a 32-bit RISC CPU with a 4kB cache, but it has been further developed into a new family of even higher performance processors to take Acorn computers into the next century.

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In addition to the 4kB cache, the processor of the ARM610 includes on the same silicon a write buffer and Memory Management Unit (MMU), using a 4k page size. These features increase the average execution speed and reduce the memory bandwidth required by the processor. This allows the external memory to support additional processors and Direct Memory Access (DMA) channels with minimal performance loss.

ARM700 designs will also be launched with an 8kB cache, enhanced write buffer, a memory Translation Look Aside Buffer (TLB) doubled in size and optional floating-point interfaces. This will be followed by the ARM800 designs.

ARM610 processor's are extremely energy-efficient, consuming significantly less power in operation than other CPUs with similar performance. This has benefits in reliability and heat dispersal.

Performance

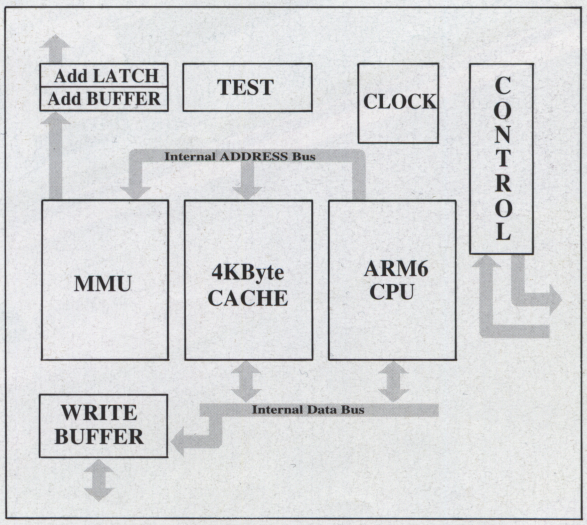
The new processor gives the Acorn Risc PC exceptional performance, particularly in high-resolution graphics modes (when fitted with VRAM) - approximately twice as fast as a 25MHz A5000 in 16-colour VGA mode, for example.

The table below shows its performance benchmarks against other Acorn computers and PC competition:

Machine	MIPS	kDhrystones		
		Screen mode		
		0 (480x240)	SVGA 16-col	SVGA 256-col
A4000 12MHz	6	11	7	3
A5000 25MHz	12	22	20	10
A5000 33MHz	15	26	23	13
A610 30MHz	22	39	36	25
A610 1MB VRAM	23	40	40	40

		VGA 16-col
386 SX - 33	6	11
486 SX/DX - 25	11	19
486 SX/DX - 33	15	26
486 DX2 - 50	19	33
486 DX - 50	20	35
486 DX2 - 66	23	40

The block diagram shows the layout of the ARM610:



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